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Apparent Positions of Compared Stars, according to Re-observation with the Meridian Circle.

1853.	App. R.A. ° ′ ″	App. Decl. ° ′ ″
Dec. 22	1 5 57·267	+28 47 57·7
25	5 35·878	25 40 44·7
...	6 49·382	25 40 25·8
...	4 51·485	22 41 16·3
...	8 57·531	23 26 7·7
...	1 10 15·788	+23 6 45·5

Observations of Euterpe with the Meridian Circle.

By M. C. Rümker.

1853.	Hamb. M.T. h m s	R.A. ° ′ ″	Decl. ° ′ ″	$\text{Log}\,\frac{q}{P}$
Dec. 10	9 34 11·7	43 2 23·3	+14 51 17·9	9·7969
13	9 21 10·4	42 43 57·4	14 50 33·9	9·7962
14	9 16 54·4	42 38 54·7	14 50 40·0	9·7966
22	8 44 7·0	42 18 49·9	14 57 5·5	9·7951
25	8 32 26·4	42 20 37·4	15 2 18·1	9·7942
28	8 21 6·9	42 27 41·5	+15 8 54·4	9·7932

Some Suggestions in Explanation of the Cause of the Primitive Incandescent Condition of the Earth and other Planets. By James Nasmyth, Esq.

Among the many facts which geological research has developed there appears none more clearly established than that of the igneous, or molten, condition of the entire mass of our globe at some vastly remote era of its physical history ; and that its present condition is the result of a succession of changes consequent on the escape, or passage into space, of the greater portion of that primitive heat, the residue of which yet manifests itself deep under the now solid crust of the earth in those molten outbursts which the now comparatively few active volcanoes vomit forth, and which we may consider to be the expiring vestiges of the once universal molten state of our globe.

As I have not met with any attempt to trace to its source, or assign a cause of, this primitive molten condition of the earth, in the most earnest, but humble spirit of philosophic suggestion and inquiry, I desire to offer in this brief form the result of some thoughts on this interesting subject, in the hope that the following remarks may chance to suggest further investigation, and so yield results more worthy of so grand a subject.

In order to state in the most simple form *the principle* upon which I base my speculations on the source of the primitive heat of our globe, I would refer to the well-known principle in the laws of matter,—namely, that when matter, whether in the solid, fluid, or

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gaseous condition, is, by some external or internal force or agency, caused to occupy less space, heat is evolved.

Applying this general principle to what there is such strong reason to suppose was the first condition of that matter which was destined to form our globe, and carrying our ideas back to the first moments of its physical history at which we may suppose it to have been summoned forth into existence as a nebulous mass, either distinct and separate, or as a separated portion from a greater nebulous mass, and granting that the law of gravitation was co-existent,—it appears to me that if we assume these conditions, the inevitable result of the action of the law of gravitation, operating on the particles of matter composing a nebulous mass, would be a progressive decrease, or collapse, of the original volume of such nebulous mass; and that the result of this decrease of volume by the collapse action of gravitation would be accompanied rise of temperature, more especially at the centre of gravity of the mass, where a nucleus would be formed, and upon whose surface myriads of particles would come crowding inwards and attach themselves. While, by the general collapse of the entire mass of the nebulous body, resulting, as before said, from the action of gravitation of its particles towards its centre of gravity, that heat which was latent in the original or primitive expanded volume of the nebulous mass would come forth and manifest itself as active heat, most intense nearest to where the focus of action lay, where it would result in a glow of fervent intensity, of which we can form no adequate conception.

In this manner I conceive the temperature of the nucleus would continue to increase, while the dimensions or volume of the nebulous mass went on diminishing, through ages of time, until the temperature of the nucleus reached such a pitch of intensity, as to begin to check the accelerating influx of particles by the dispersive influence of the intense heat of the nucleus. Then would ensue an era of retardation in the progressive accumulation of matter upon the nucleus; and its after history would most probably be governed by the combined action of gravitative accumulation and those changes which would result from the continual escape of the heat of the remaining nebulous envelope, and so render the matter of which it was composed more subject to the attractive influence of the globe now existing within it.

I conceive that countless ages might thus elapse, through the mutual action of the agencies I have referred to, ere such a globe had commenced the earliest stages of its geological history, which would date from that period when all further accession of temperature was at an end, and the nucleus (now a planet) began to part with its primitive heat by its radiation into space.

Thus I have endeavoured to assign as the cause of the primitive incandescent temperature of planetary masses, the action of gravitation upon the nebulous matter, of which they are conceived to have been formed: the action of gravitation overtaking in its collapsing influence that gradual decrease of volume, which might otherwise have occurred through simple contraction, and so

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expressing the heat latent in the nebulous volume, and causing it to come forth as sensible heat in most active condition, and so manifest itself in a state of intense incandescence in the nucleus or planetary mass.

Should these remarks tend in the most humble degree to suggest some further thoughts on this subject to such of the members of the Royal Astronomical Society who may happen to turn their attention to these speculations, I shall feel glad in having thus ventured on suggesting them.

Note on the Relations of the Perihelia and Nodes of Cometary Orbits. By Edward Cooper, Esq.

" In the Introduction to my little work on Cometic Orbits, published last year, I called the attention of astronomers to the somewhat remarkable result of an investigation into the places of the perihelia and nodes of periodic comets, and of a comparison with those of the then known planets.

" The number of comets then known, or supposed to complete their revolutions in times under 500 years, was 23; and it so happened that the then known number of planets was also 23. Since the date of the Introduction I have mentioned twelve new asteroids have been added to the preceding 23; thus producing a total of 35 planets discovered up to the present date. It appeared to me to be desirable to class these bodies, as I had previously done the former; and the result at present stands thus :—

" *L. P.'s of Planets.*

Hel. L.			
Between 45° and 135°	13		24
135 — 225	5	11	
225 — 315	6		
315 — 45	11		

" The numbers formerly were 16 and 7; now we have 24 and 11: a fact which appears materially to strengthen the suspicion of some yet undiscovered law. However, when the same process is applied to the nodes, although the result be similar, yet a much more remarkable one arises from the adoption of a different semicircle.

" *☊ of Planets.*

Hel. L.			
Between 45° and 135°	19		21
135 — 225	9	13	
225 — 315	4		
315 — 45	2		

" But if, instead of the semi-circles 315° to 135° and 135° to 315°, we adopt those from 45° to 225° and 225° to 45°, we see